

Downstream Survival of Juvenile Stream Type Chinook Salmon and Steelhead Through the Snake/Columbia River Hydropower System and Adult Return Rates

TMT

December 13, 2006

Bill Muir



Outline

- Stream type Chinook survival from Snake River Basin hatcheries to LGR

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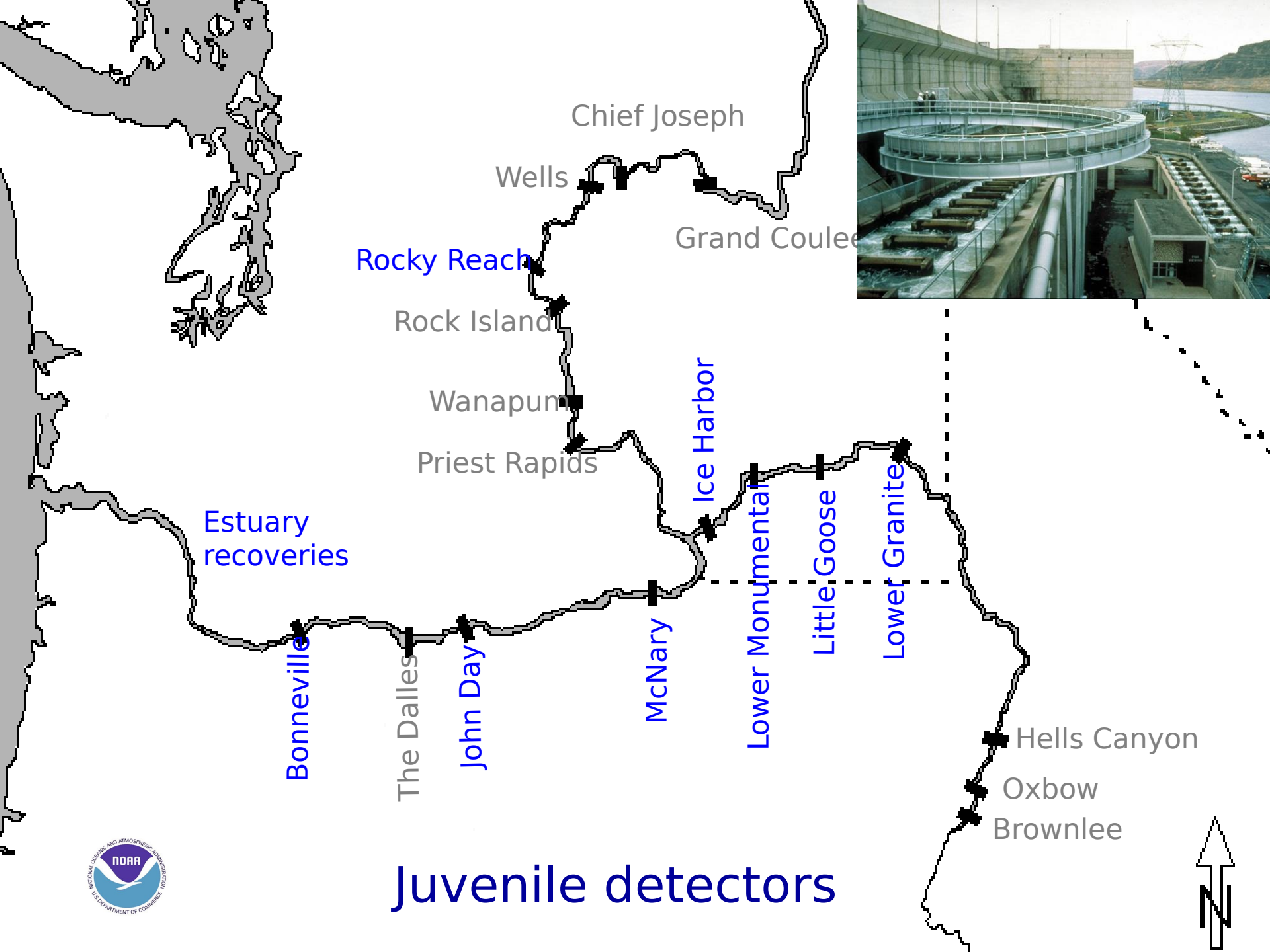
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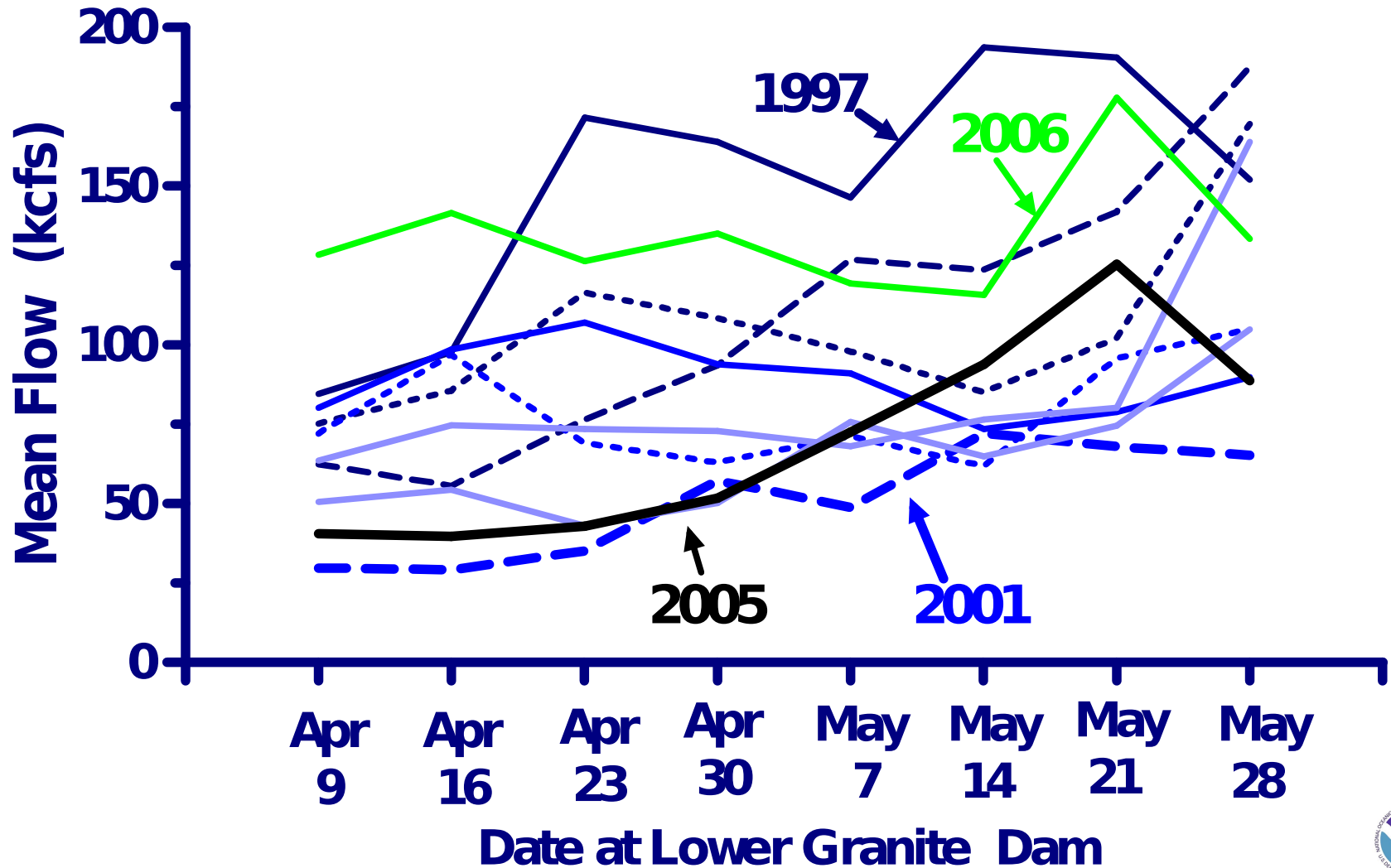
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- Their survival through the entire hydropower system
- Smolt-to-adult returns



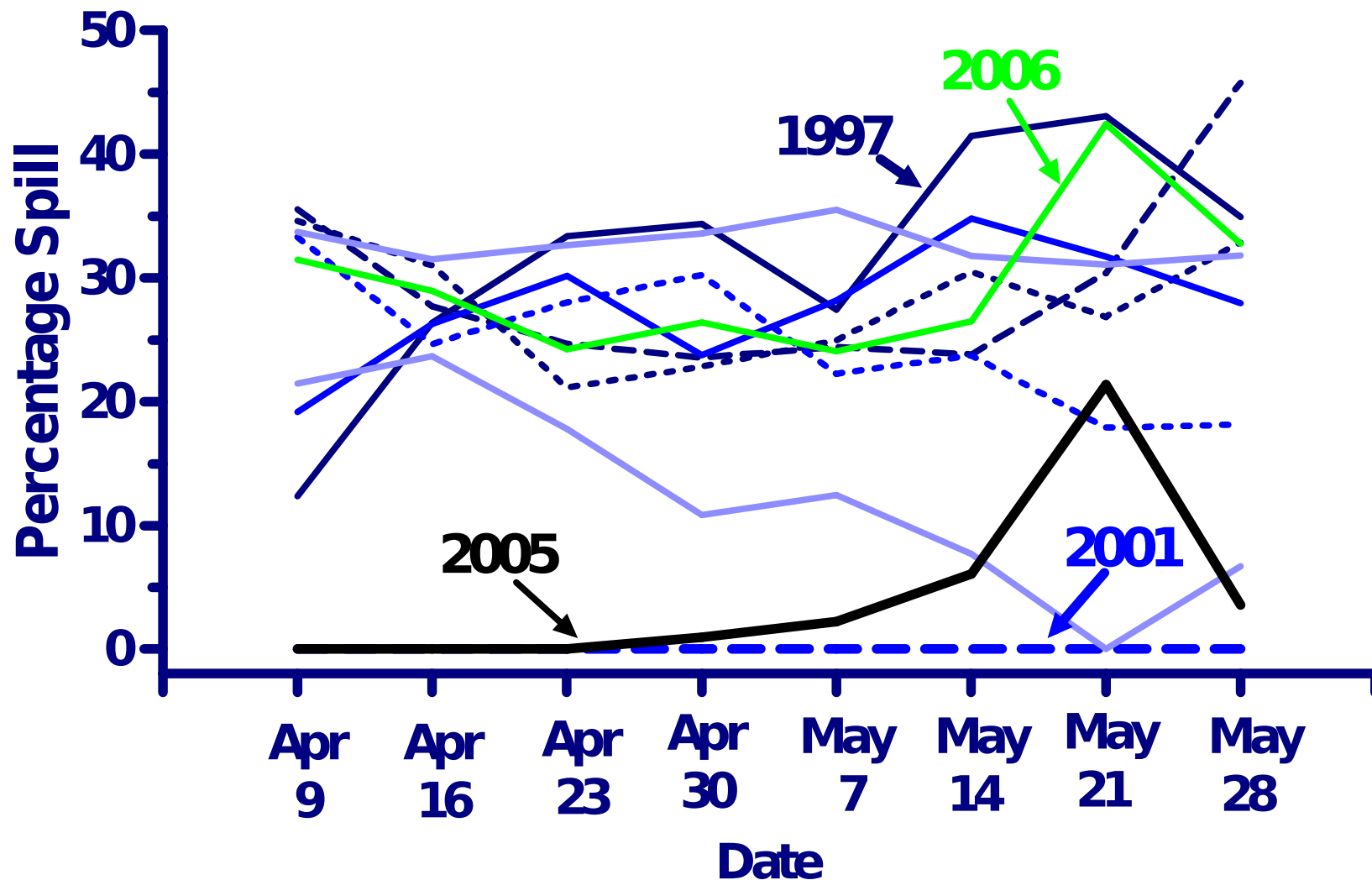




Weekly Mean Flow (kcfs) Lower Granite Dam



Mean Percentage Spilled LGR, LGS, LMN

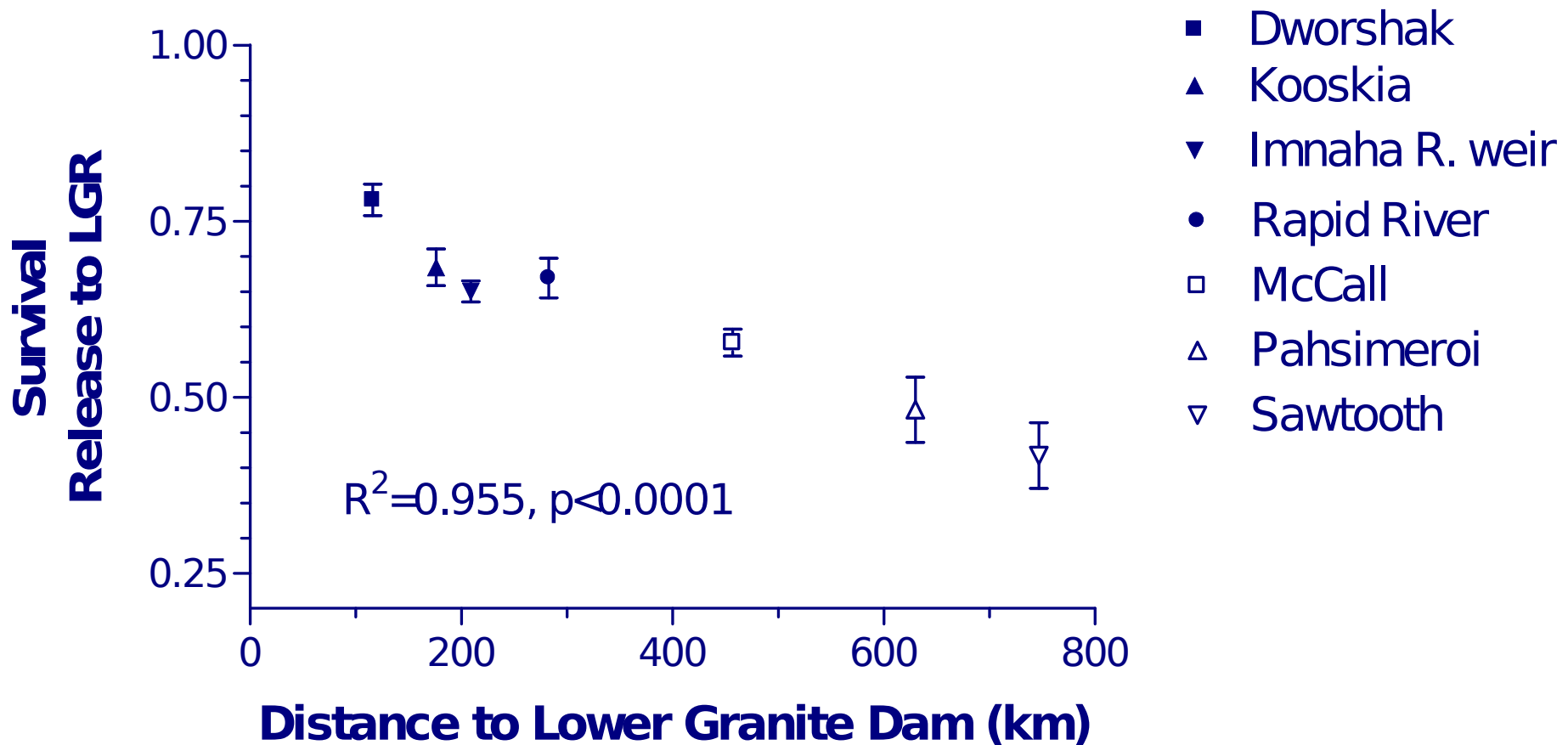


Transportation

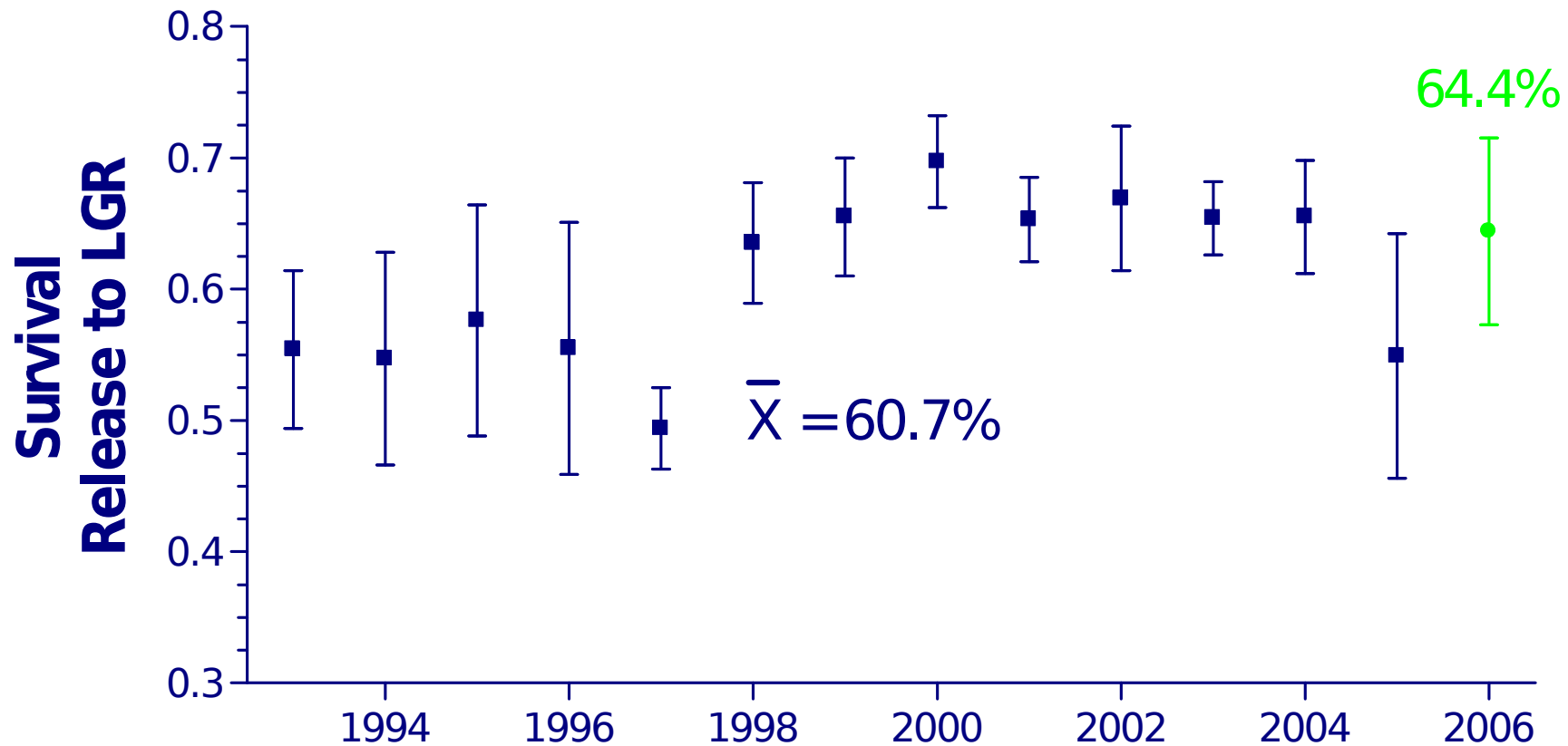
- 62% of non-tagged stream type Chinook
- 76% of tagged Chinook

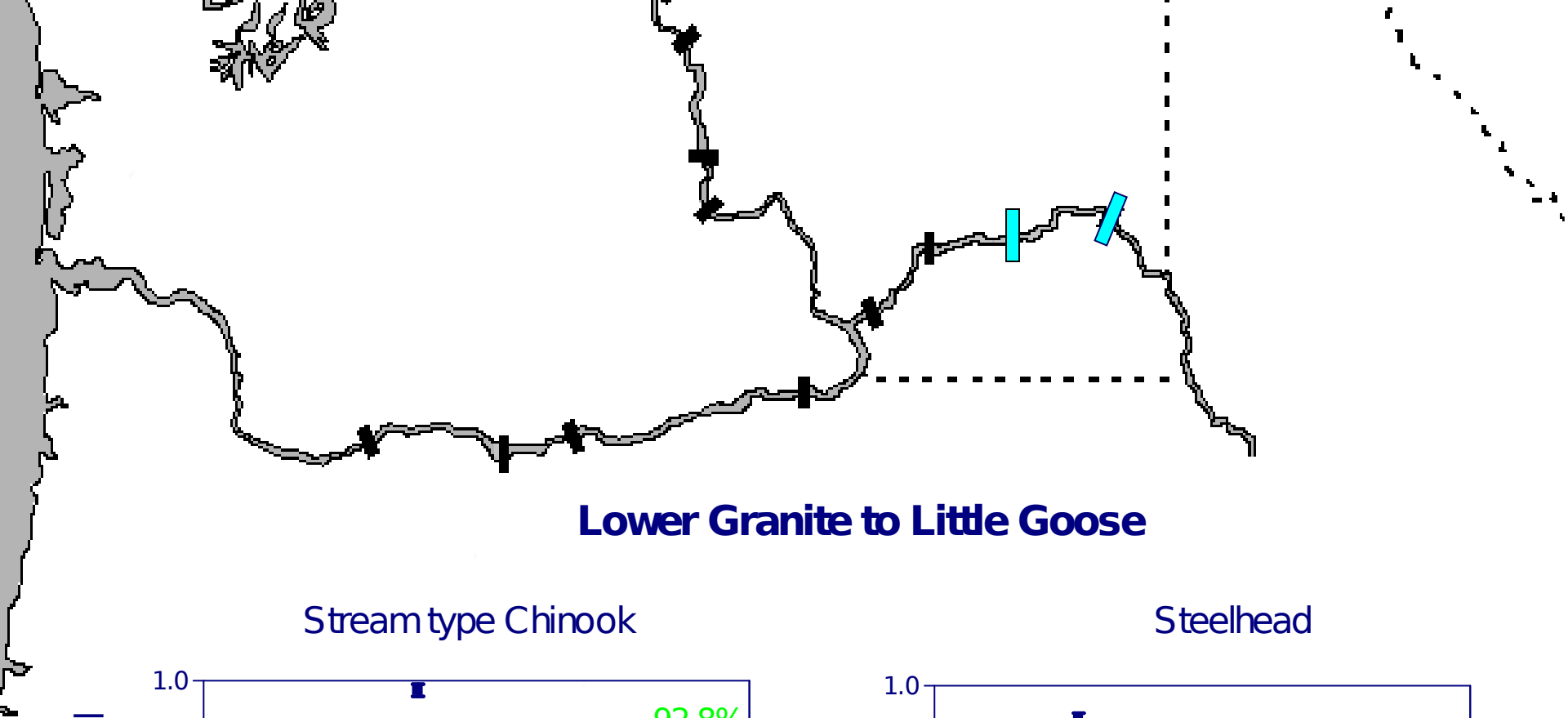


Hatchery stream type Chinook (1993-2006)



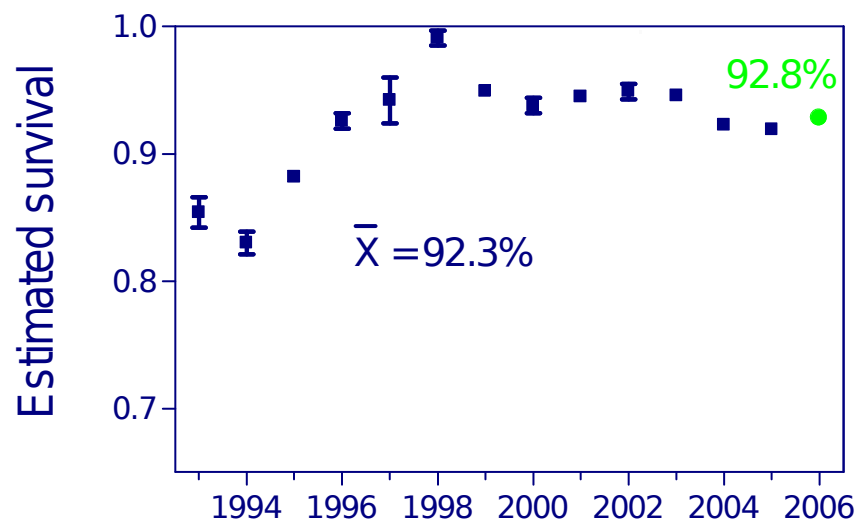
Stream type Chinook All Snake River Basin hatcheries combined



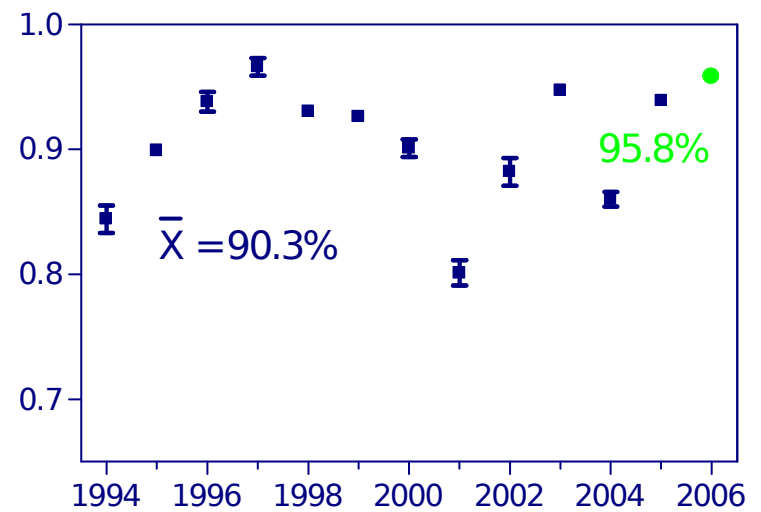


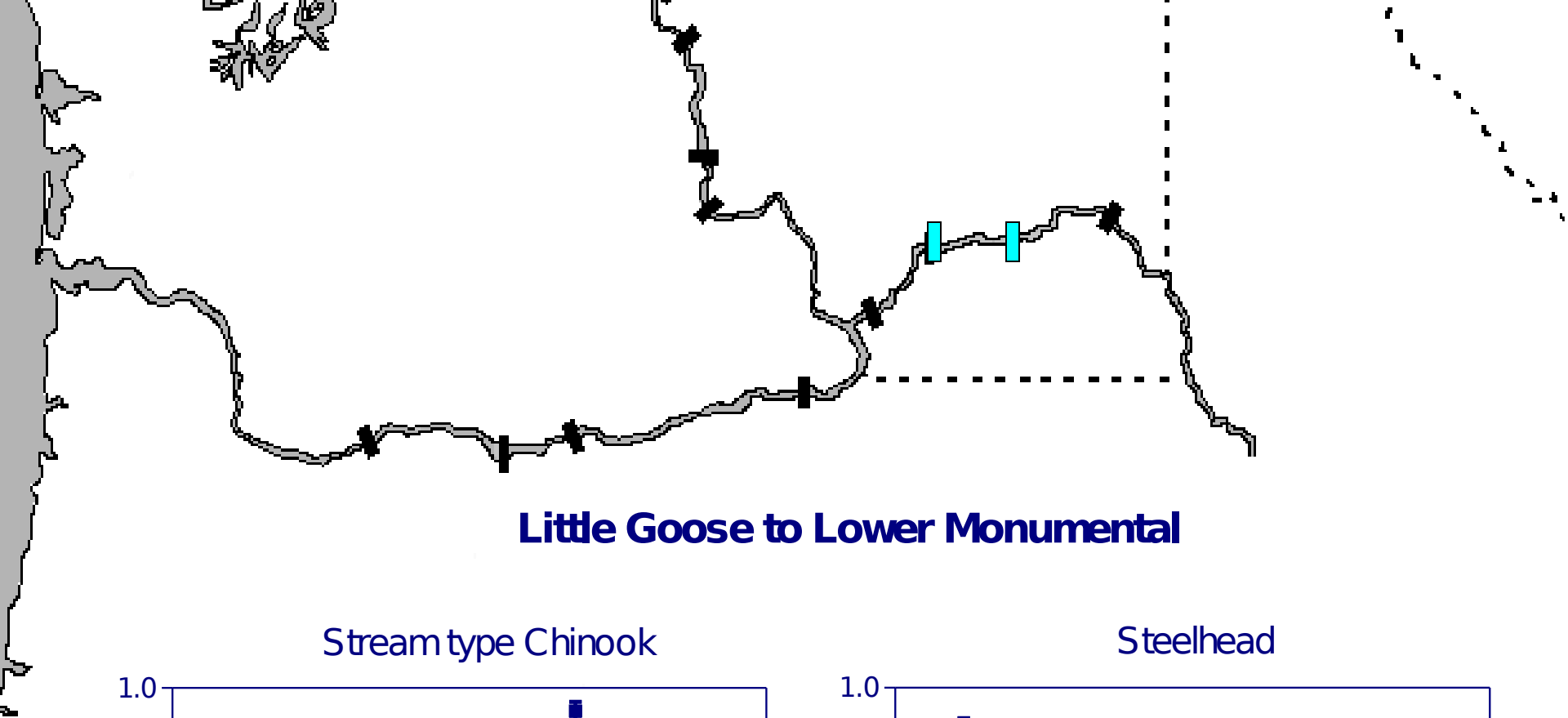
Lower Granite to Little Goose

Stream type Chinook



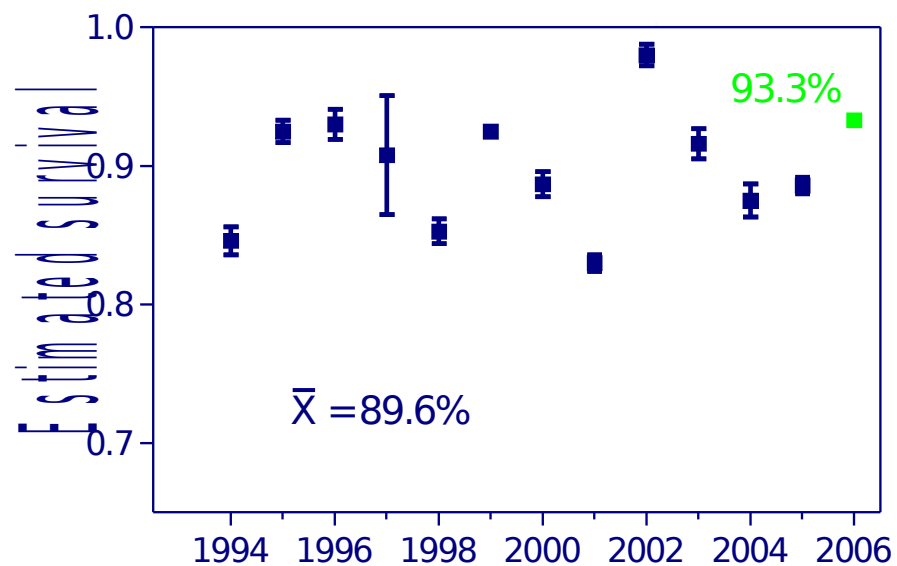
Steelhead



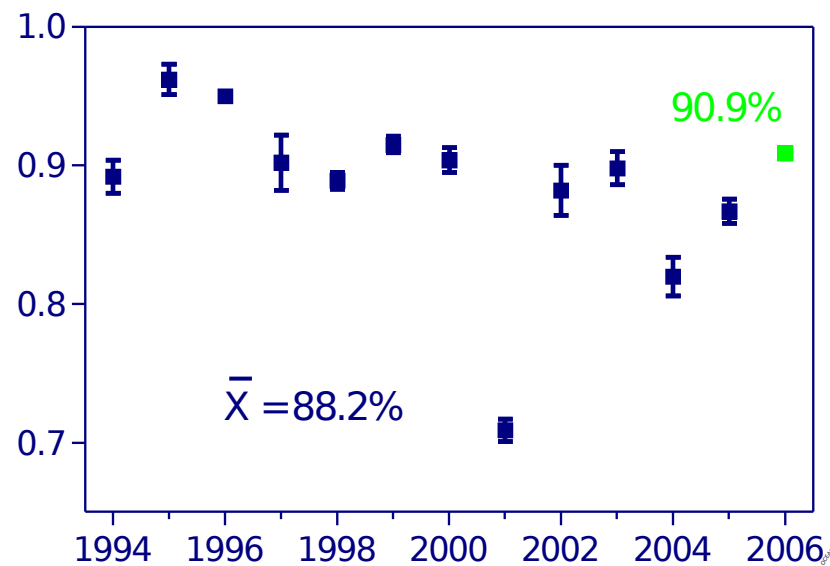


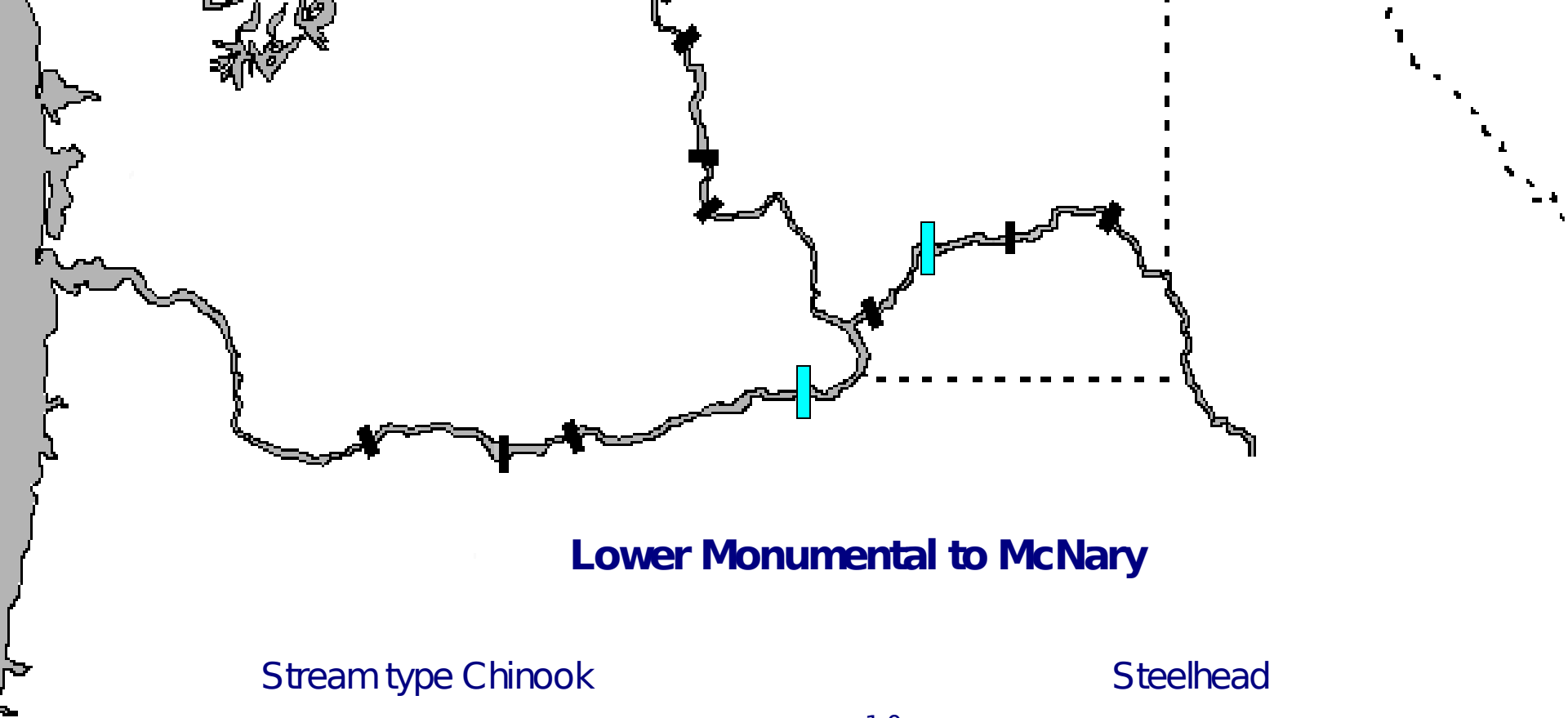
Little Goose to Lower Monumental

Stream type Chinook



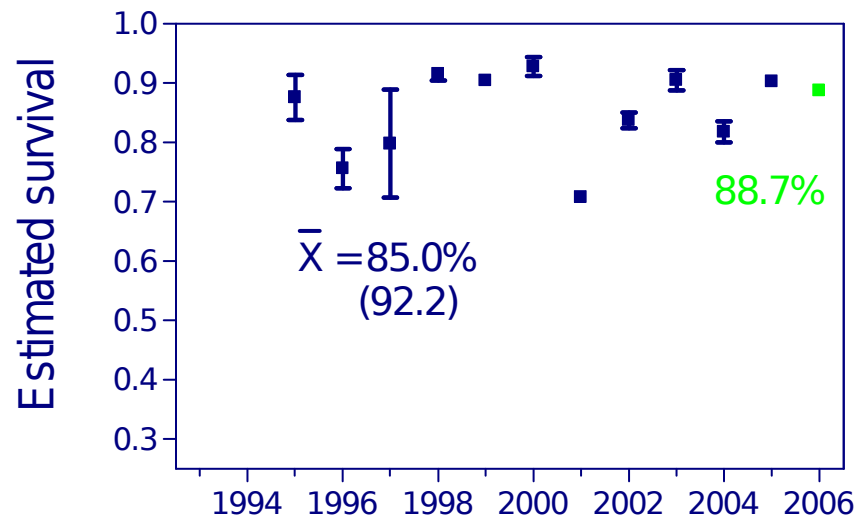
Steelhead



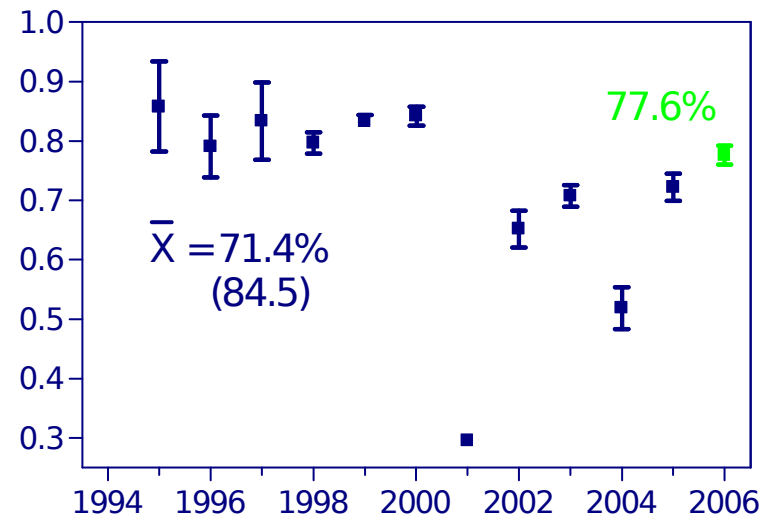


Lower Monumental to McNary

Stream type Chinook

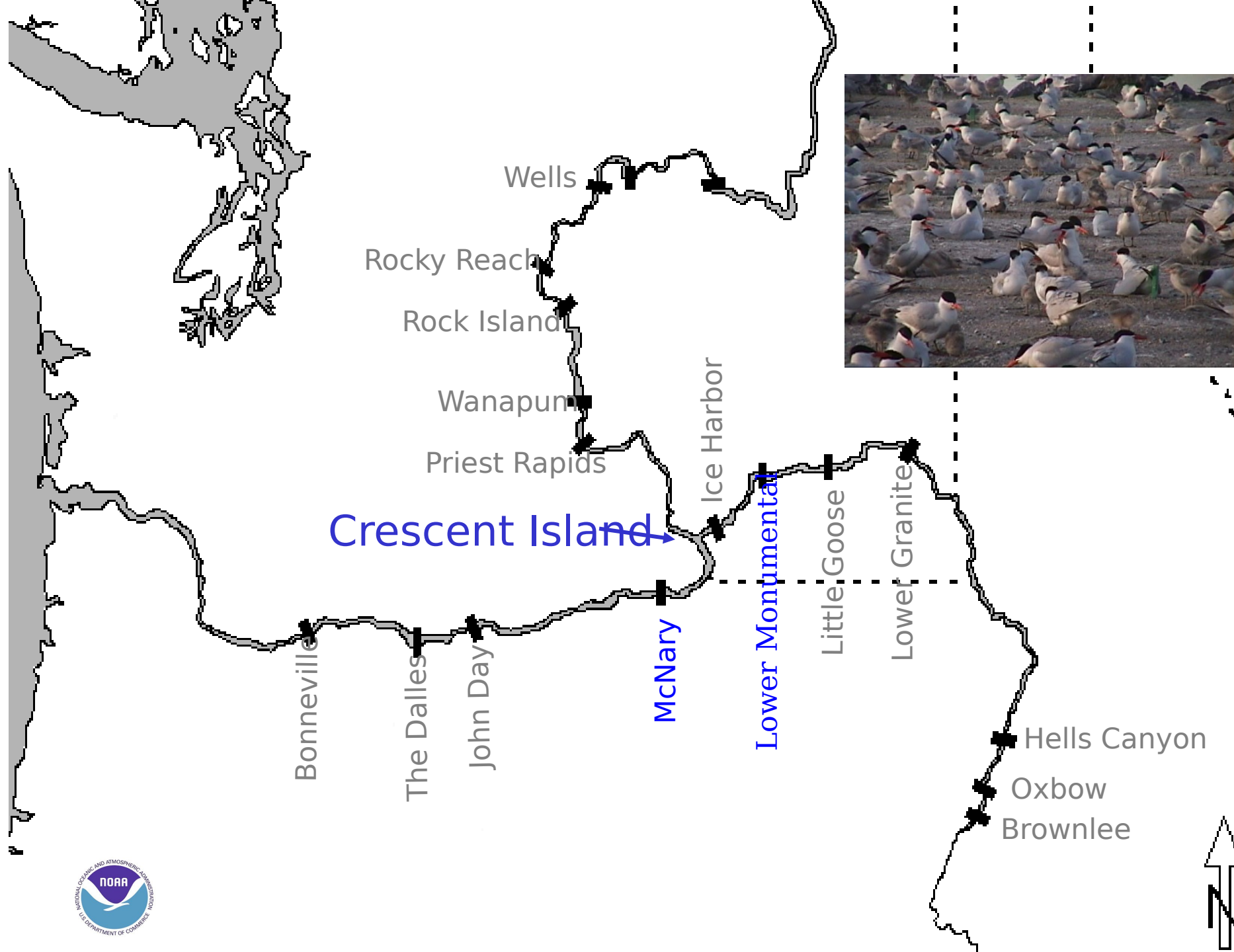


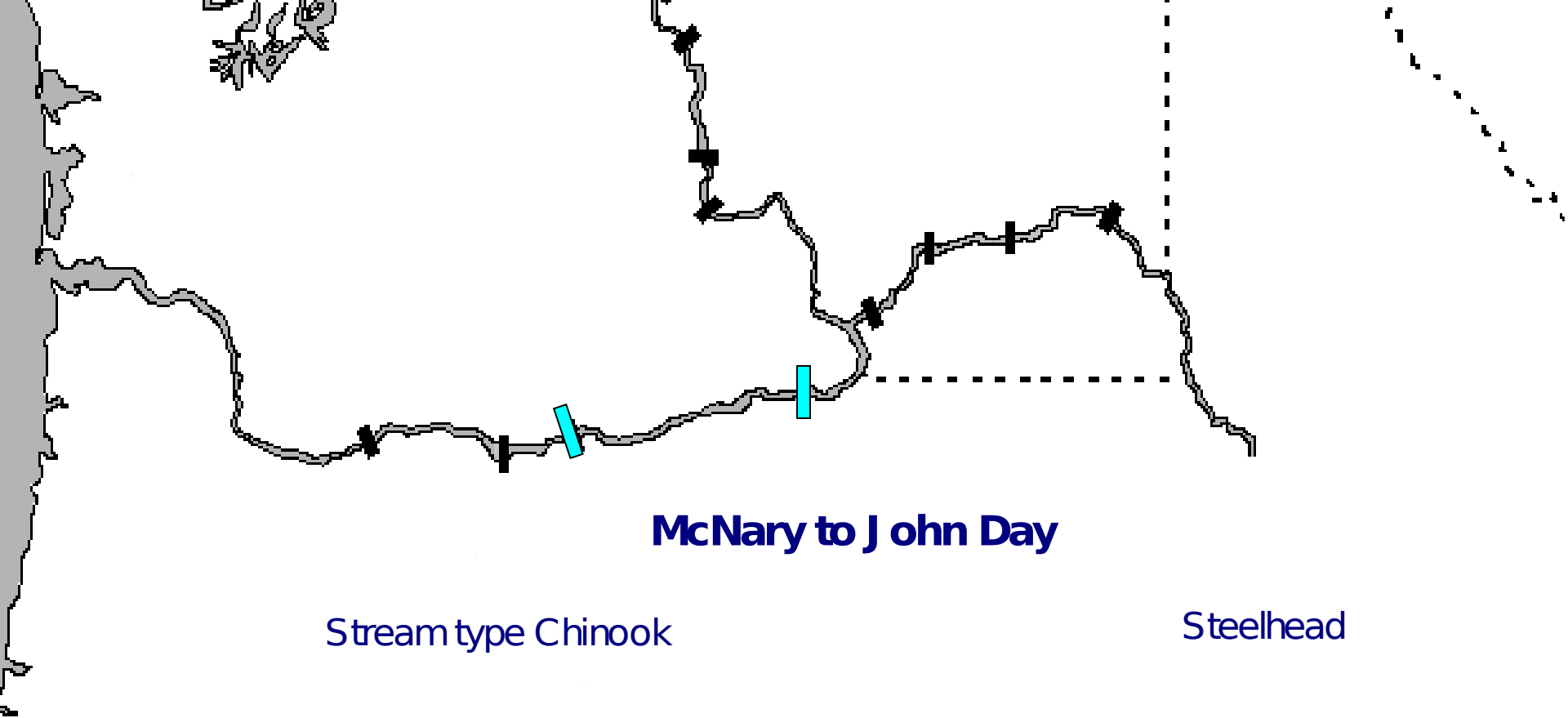
Steelhead



Lower Monumental-McNary Survival Partitioned in 2006

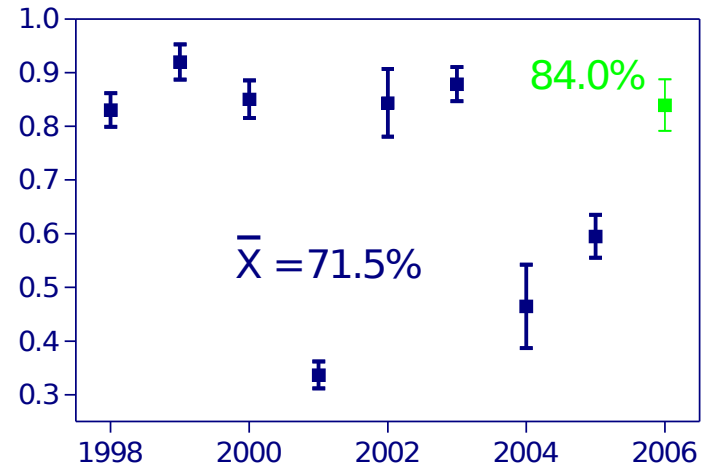
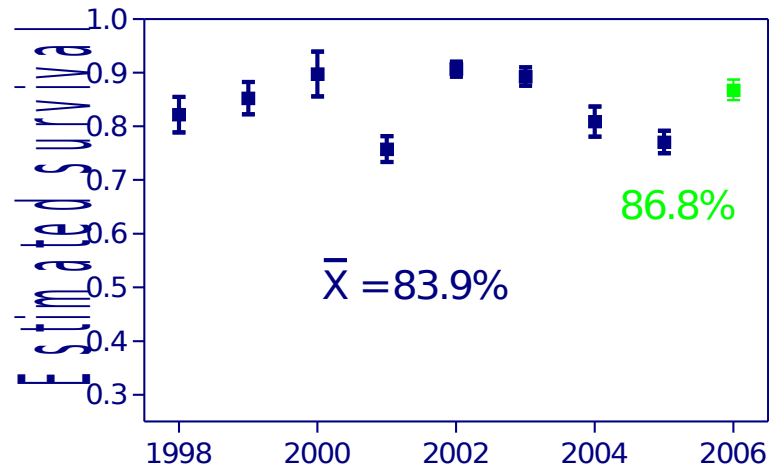
- Chinook Salmon
 - LMN-MCN 0.887 (0.004)
 - Lower Monumental to Ice Harbor: 0.914 (0.003)
 - Ice Harbor to McNary Dam: 0.964 (0.005)
- Steelhead
 - LMN-MCN: 0.776 (0.016)
 - Lower Monumental to Ice Harbor: 0.913 (0.010)
 - Ice Harbor to McNary Dam: 0.863 (0.018)

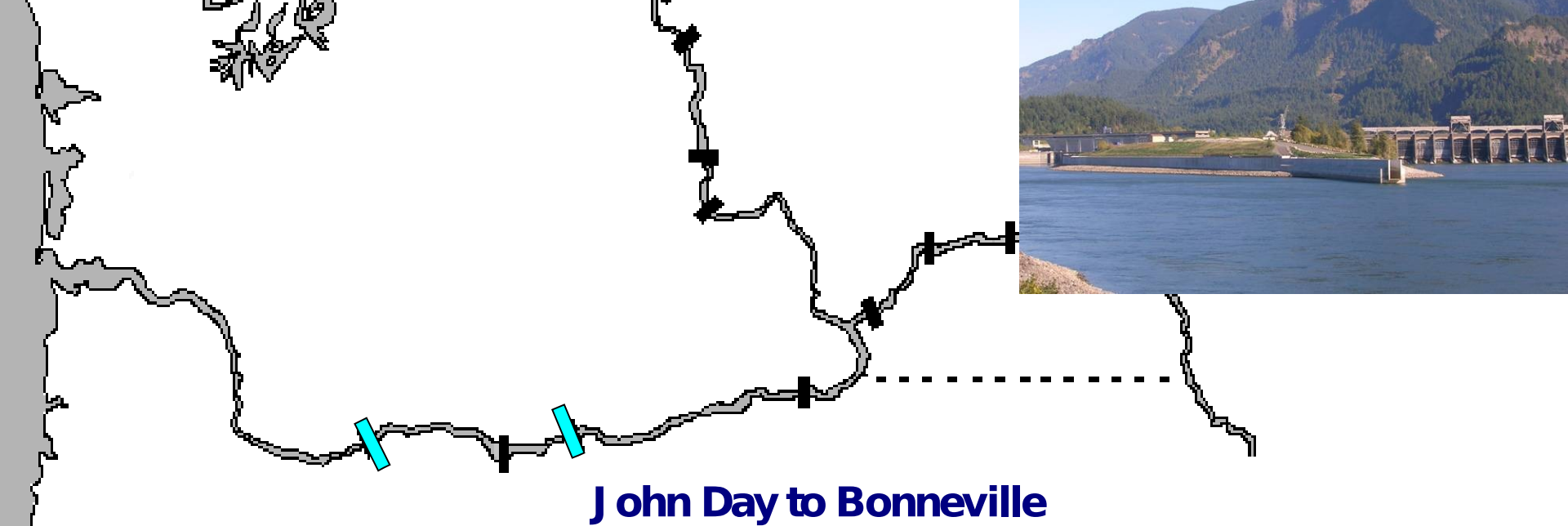




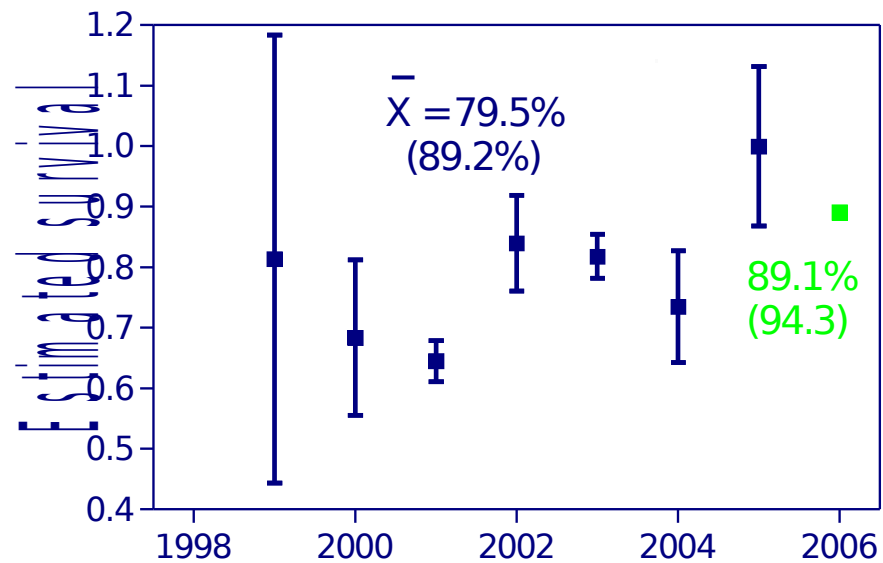
Stream type Chinook

Steelhead

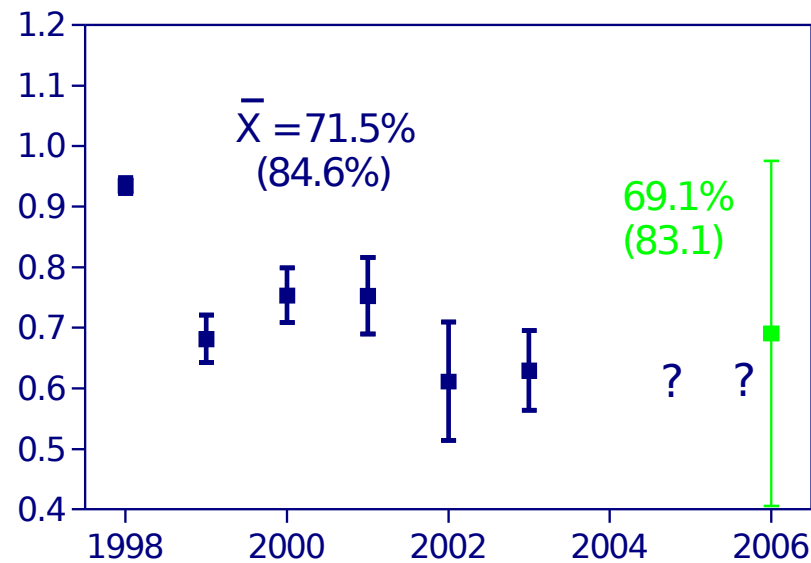


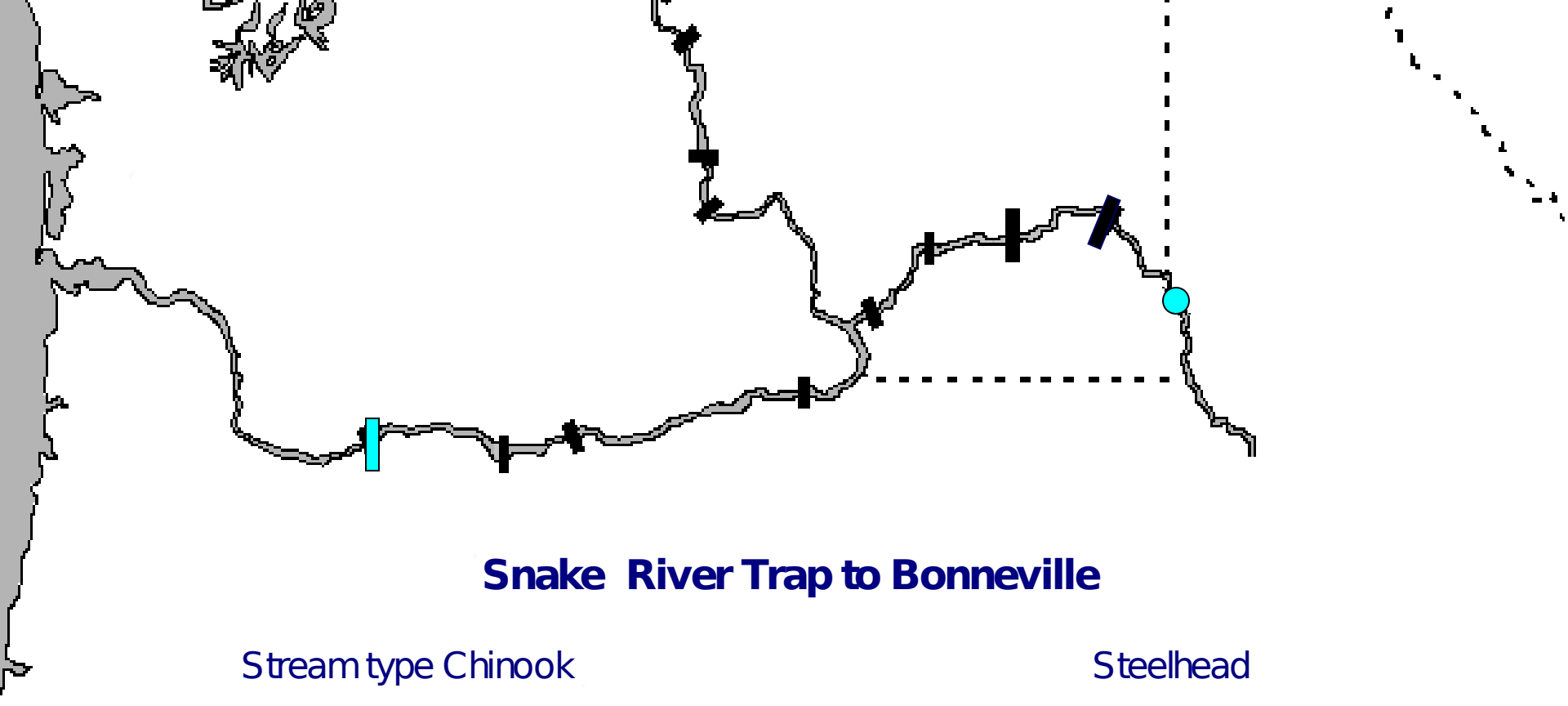


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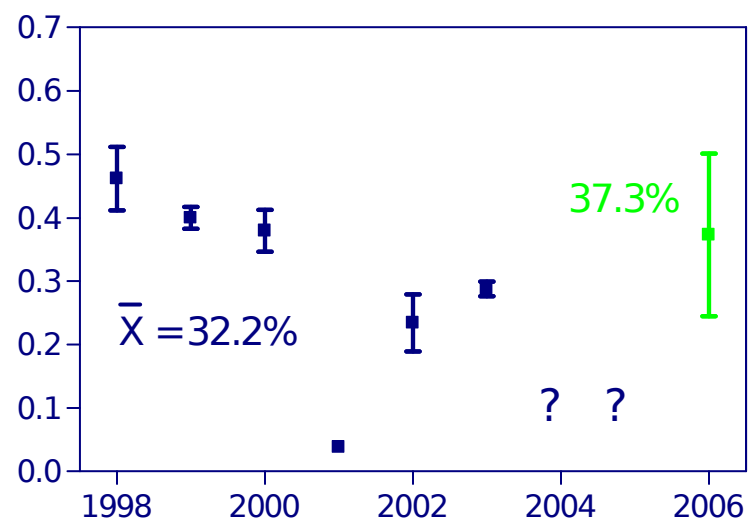
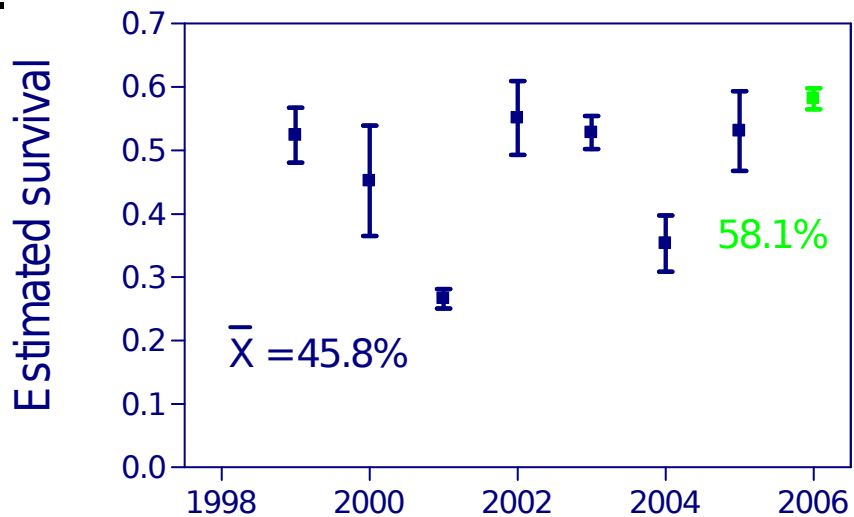
Steelhead



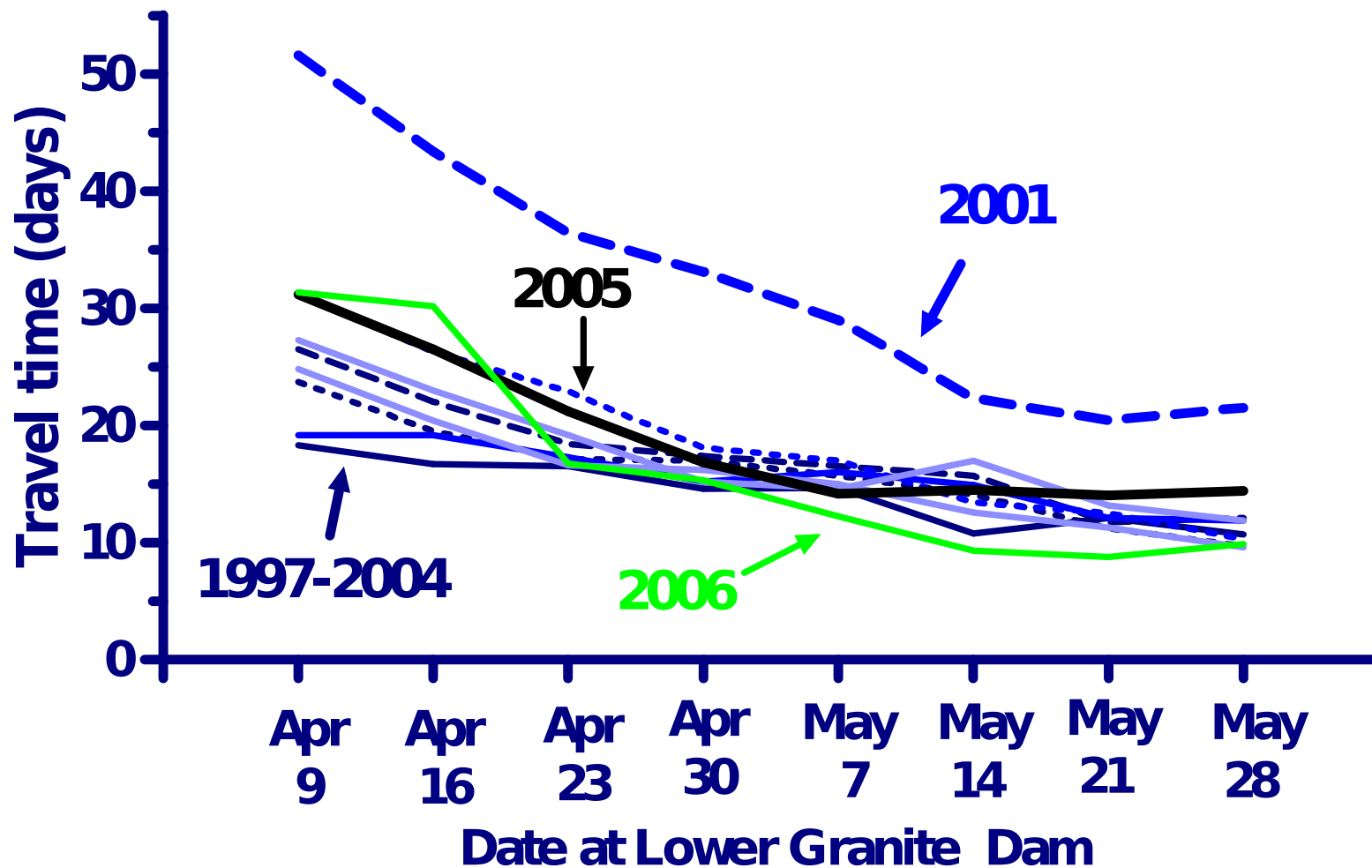


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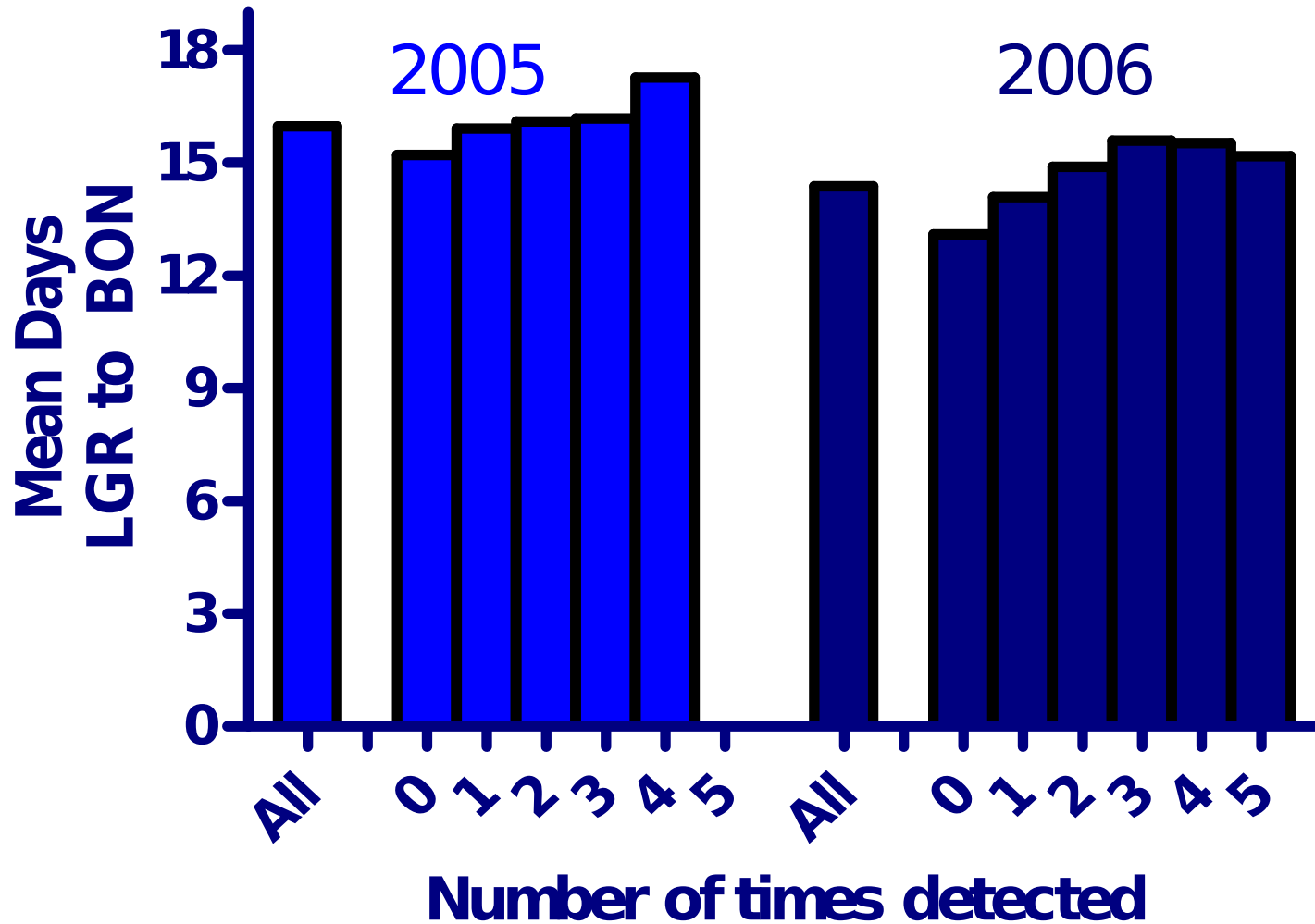
Steelhead



Median travel time Stream type Chinook Lower Granite to Bonneville (461 km)

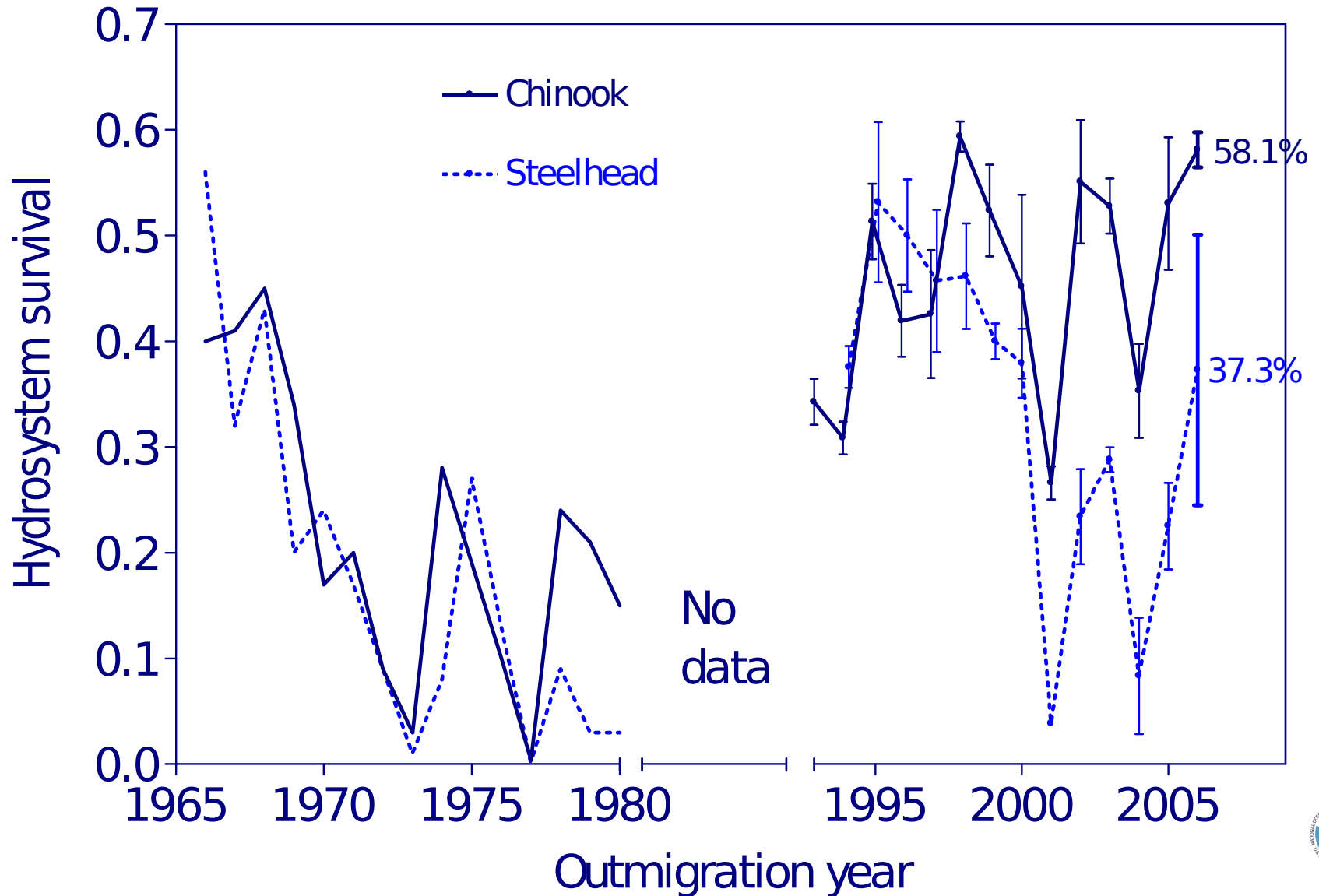


LGR-BON Travel Time by number of detections



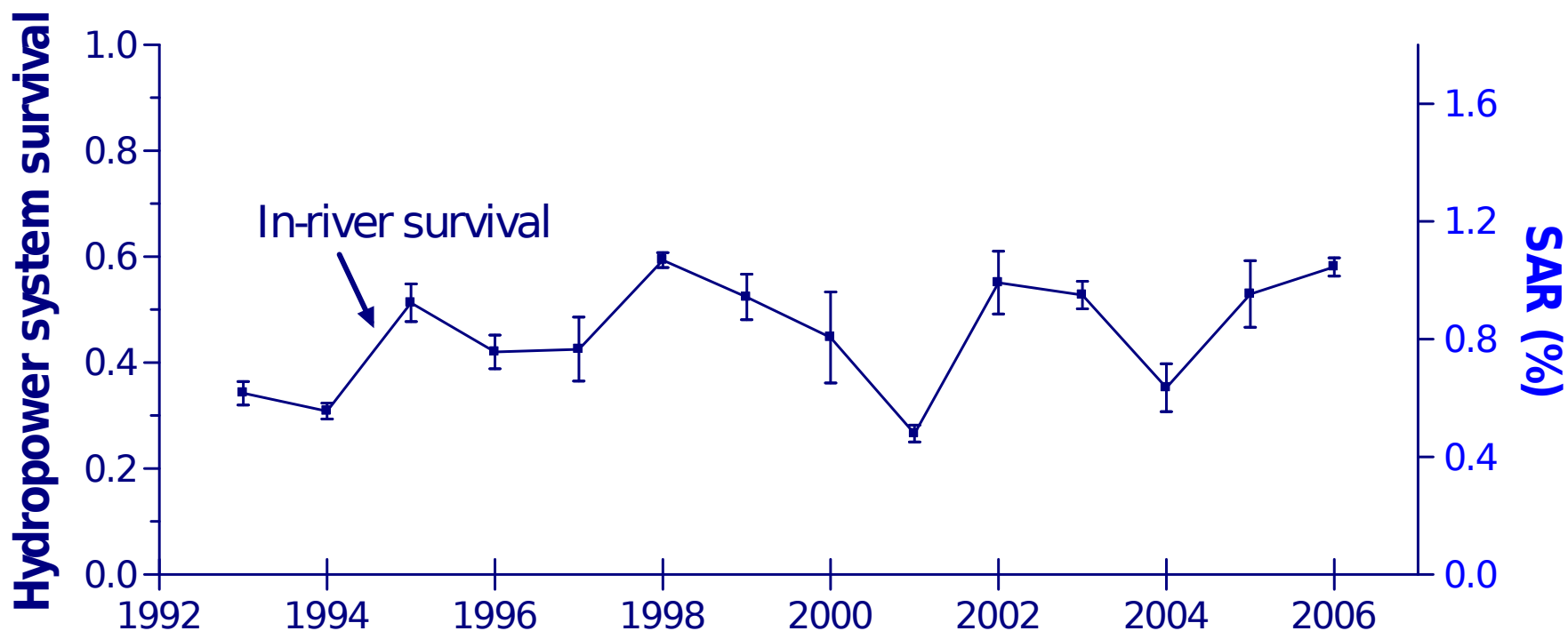
Snake River Trap to Bonneville Dam Tailrace

Per-project expansion in some years

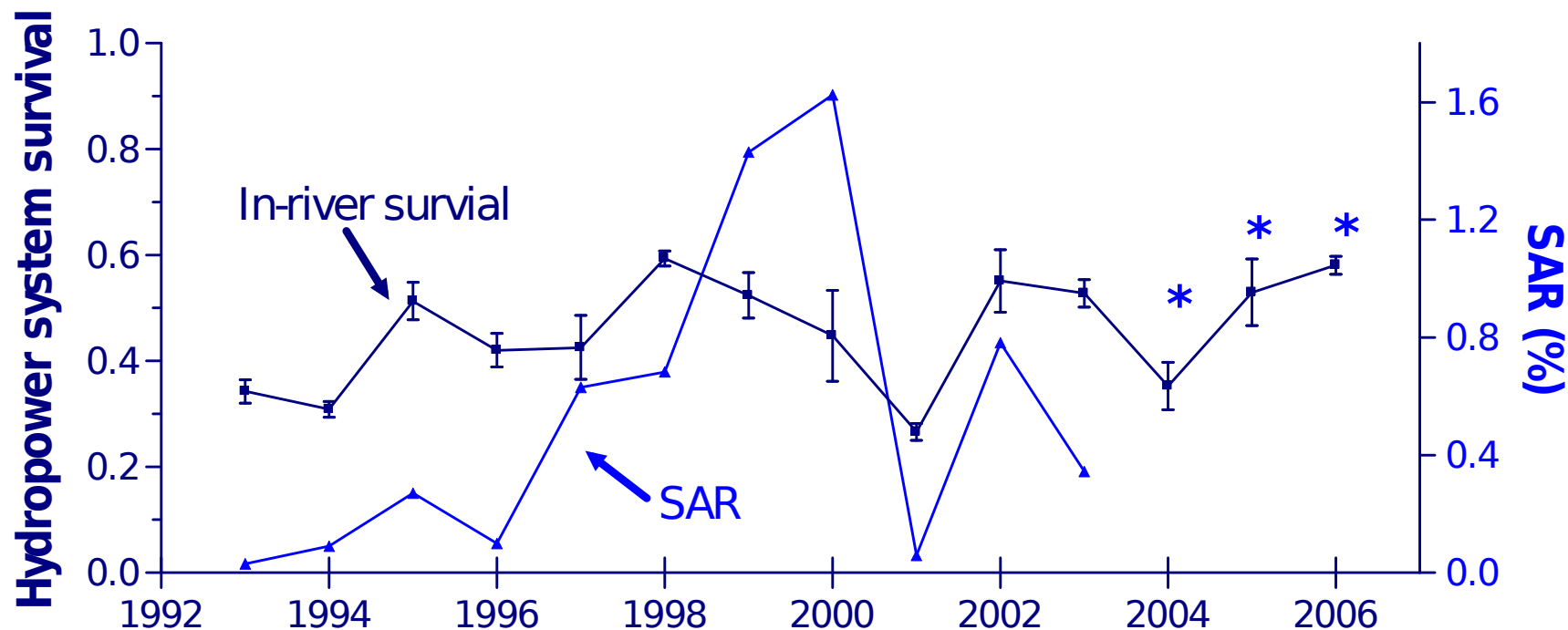


How big of part does
hydropower system survival
play in adult returns?

Stream type Chinook based on PIT tags

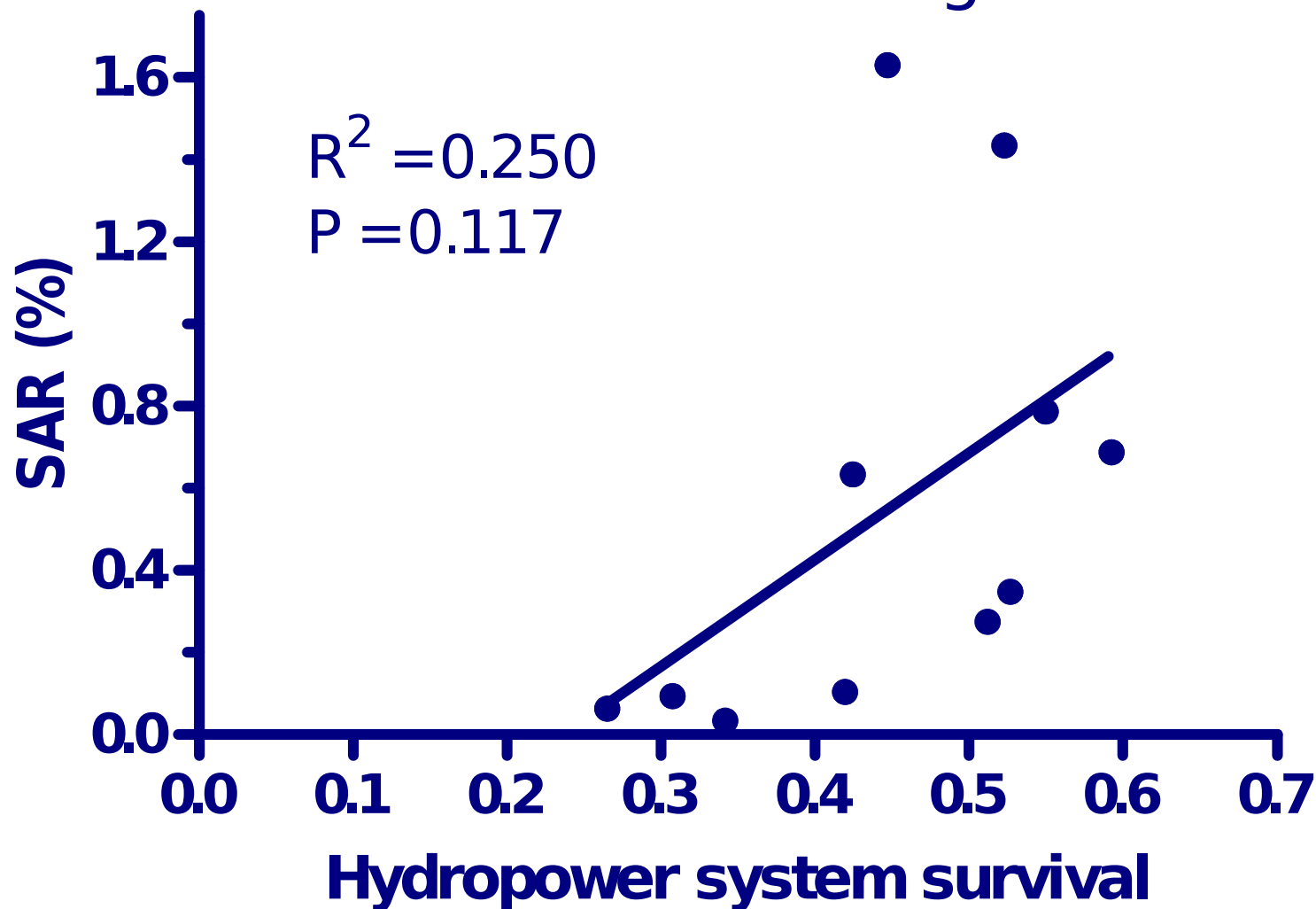


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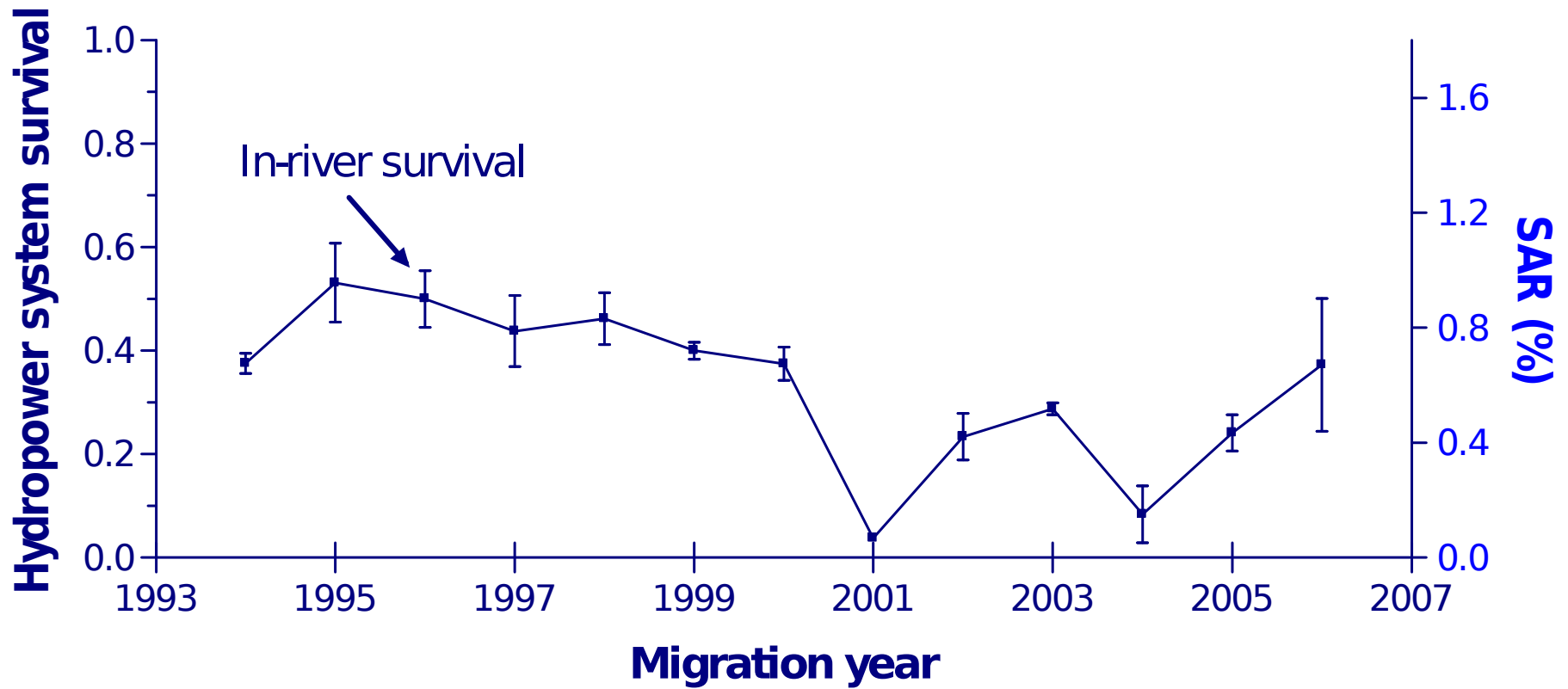


* Incomplete adult returns

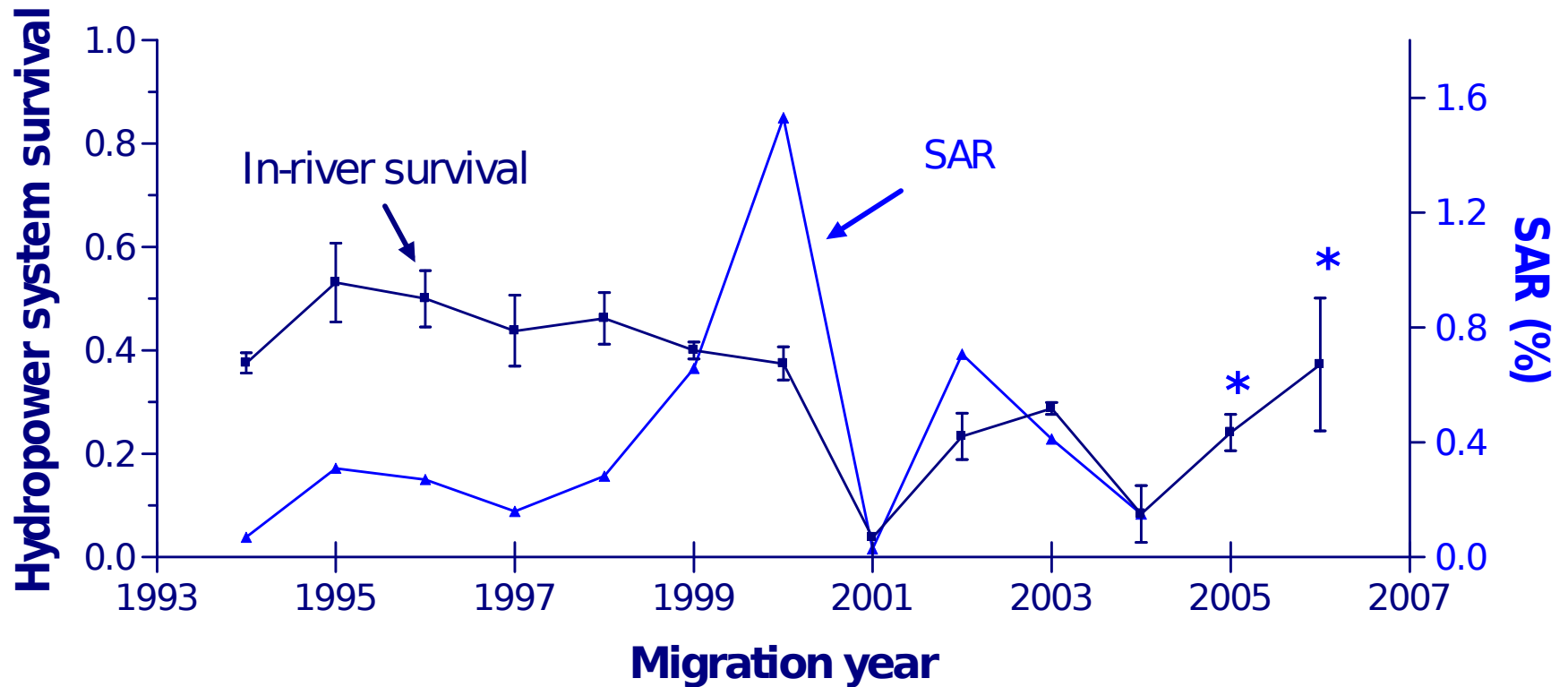
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Steelhead based on PIT tags

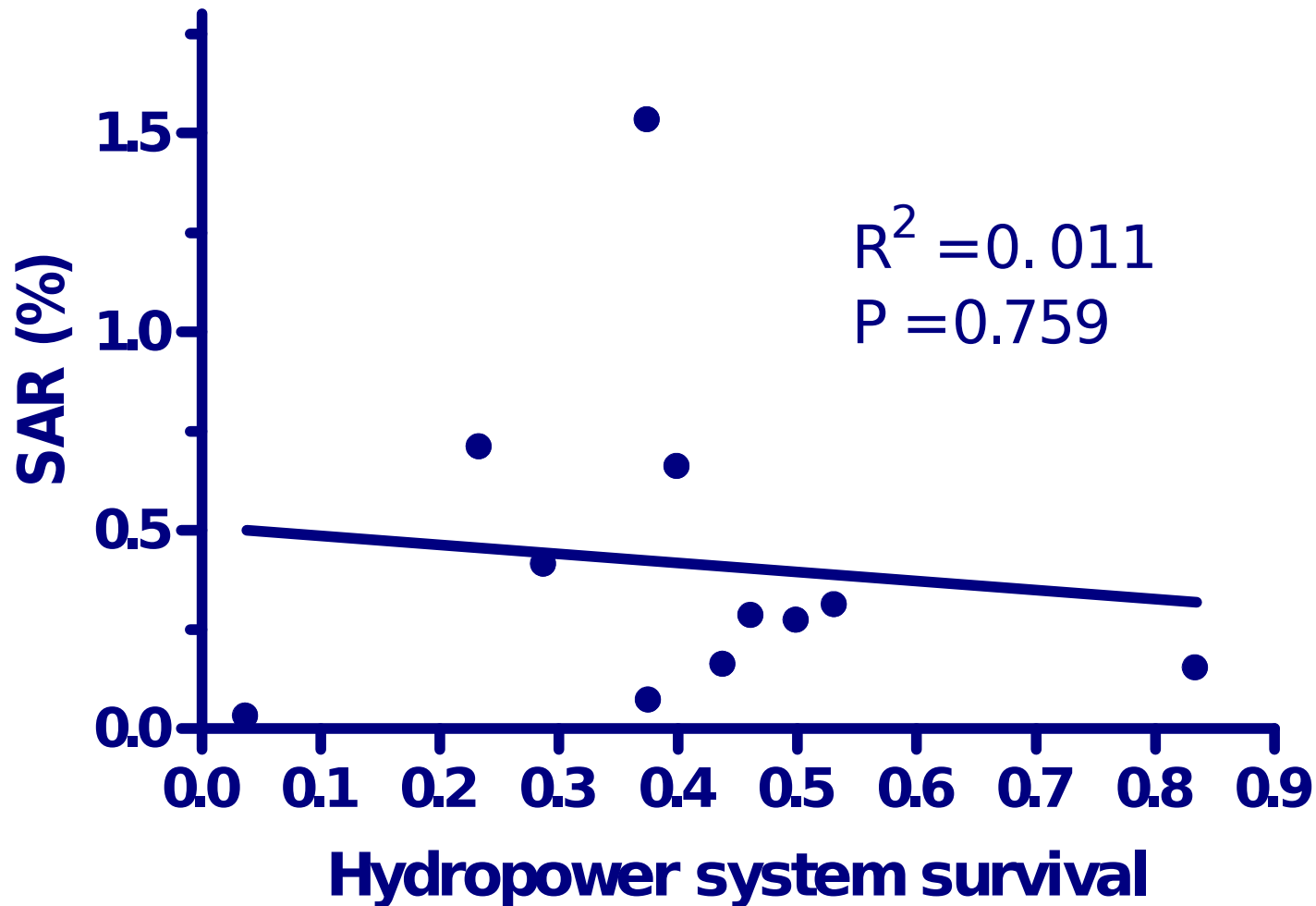


Steelhead based on PIT tags



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Steelhead based on PIT tags



Snake River fall Chinook

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- Therefore, we are relying on SARs instead.

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- Reach survival averaged 93% per project for Chinook and 88% for steelhead in 2006
- Hydropower system survival was 58% for Chinook and 37% for steelhead in 2006
- Chinook and steelhead direct hydropower system survival has little influence on SAR

Questions